

### 3-5: Finding the Equation of a Line

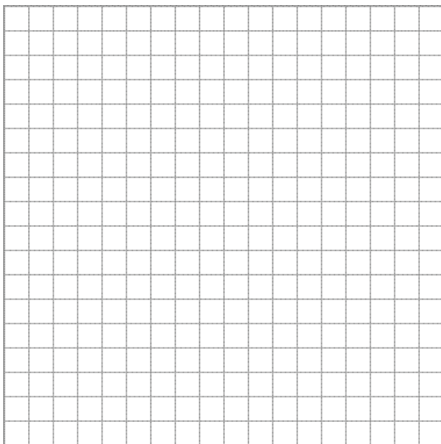
**Warm-up:** Write an equation for the line through the pair of points.

a.  $(5, 9), (5, -2)$

b.  $(9, 1), (6, 4)$

*Question:* What determines a line?

*Example 1:* The formula relating blood pressure and age is linear. Normal systolic blood pressures are 110 for a 20 year old and 130 for a 60 year old. Graph the line and find an equation where blood pressure  $B$  is a function of age  $A$ .



(Hint: Fit it into the slope-intercept form)

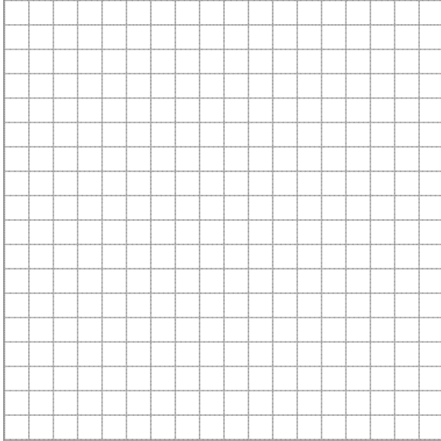
*Point-Slope Theorem:*

*Example 2:* Find an equation for the line through  $(-3, 6)$  and  $(5, 0)$  using the point-slope theorem.

When dealing with real world situations, deal with the problem as we always have: find the equation first, then answer the question.

*Example 3:* The lightest recommended weight for a Martian with height 4'10" is 109 lbs. This weight increases 2 lbs/in to a height of 5'1" and then goes up 3 lbs/in to a height of 6", which is tall for a Martian.

a. Graph the situation.



b. Find the two equations that describe these situations.

*Homework:*

***"I'm not sure I want popular opinion on my side -- I've noticed those with the most opinions often have the fewest facts." - Bethania McKenstry***